



SEQUENCE LISTING

<110> Novozymes Biotech
Royer, John C
Moyer, Donna L
Yoder, Wendy T
Shuster, Jeffrey R

<120> Non-Toxic, Non-Pathogenic, Non-Pathogenic Fusarium Expression
System

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<140> 09/461,537

<141> 1999-12-15

<150> 08/816,915

<151> 1997-03-13

<150> 08/726,105

<151> 1996-10-04

<150> 08/404,678

<151> 1995-03-15

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<151> 1994-06-30

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<170> PatentIn version 3.2

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-5

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His Cys Val Ser Gly Tyr Ala Gln Ser Gly Phe Gln Ile Arg Ala Gly
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Ser Leu Ser Arg Thr Ser Gly Gly Ile Thr Ser Ser Leu Ser Ser Val
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Arg Val His Pro Ser Tyr Ser Gly Asn Asn Asn Asp Leu Ala Ile Leu
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Lys Leu Ser Thr Ser Ile Pro Ser Gly Gly Asn Ile Gly Tyr Ala Arg
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Gln Tyr Gly Thr Ser Ala Ile Thr Asn Gln Met Phe Cys Ala Gly Val
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Val Asp Ser Ser Asn Thr Leu Ile Gly Ala Val Ser Trp Gly Asn Gly
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| gcaaagtcct tctagtagct cccaaaactt gatttacgcg ctctccaatc aaaagtagct | 180 |
| tccaaaagtg atctaccta gctctagatc agggcaccta ttcgcaaaga tctacaagct | 240 |
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| catatagtaa agacttcagg tcgaccctc aatagacata tgcgaaccga aaaccaacag | 1560 |
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 Leu Pro Val Leu Ala Leu Ala Ala Asp Gly Arg Ser Thr Arg Tyr Trp
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 Asp Cys Cys Lys Pro Ser Cys Gly Trp Ala Lys Lys Ala Pro Val Asn
 10 15 20 25

cag cct gtc ttt tcc tgc aac gcc aac ttc cag cgt atc acg gac ttc 195
 Gln Pro Val Phe Ser Cys Asn Ala Asn Phe Gln Arg Ile Thr Asp Phe
 30 35 40

gac gcc aag tcc ggc tgc gag ccg ggc ggt gtc gcc tac tcg tgc gcc 243
 Asp Ala Lys Ser Gly Cys Glu Pro Gly Gly Val Ala Tyr Ser Cys Ala

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| gac | cag | acc | cca | tgg | gct | gtg | aac | gac | gac | ttc | gcg | ctc | ggt | ttt | gct | 291 | | | | | | | | | | | | | | |
| Asp | Gln | Thr | Pro | Trp | Ala | Val | Asn | Asp | Asp | Phe | Ala | Leu | Gly | Phe | Ala | | | | | | | | | | | | | | | |
| 60 | | | | | 65 | | | | | 70 | | | | | | | | | | | | | | | | | | | | |
| gcc | acc | tct | att | gcc | ggc | agc | aat | gag | gcg | ggc | tgg | tgc | tgc | gcc | tgc | 339 | | | | | | | | | | | | | | |
| Ala | Thr | Ser | Ile | Ala | Gly | Ser | Asn | Glu | Ala | Gly | Trp | Cys | Cys | Ala | Cys | | | | | | | | | | | | | | | |
| 75 | | | | | 80 | | | | | 85 | | | | | | | | | | | | | | | | | | | | |
| tac | gag | ctc | acc | ttc | aca | tcc | ggt | cct | gtt | gct | ggc | aag | aag | atg | gtc | 387 | | | | | | | | | | | | | | |
| Tyr | Glu | Leu | Thr | Phe | Thr | Ser | Gly | Pro | Val | Ala | Gly | Lys | Lys | Met | Val | | | | | | | | | | | | | | | |
| 90 | | | | | 95 | | | | | 100 | | | | | 105 | | | | | | | | | | | | | | | |
| gtc | cag | tcc | acc | agc | act | ggc | ggt | gat | ctt | ggc | agc | aac | cac | ttc | gat | 435 | | | | | | | | | | | | | | |
| Val | Gln | Ser | Thr | Ser | Thr | Gly | Gly | Asp | Leu | Gly | Ser | Asn | His | Phe | Asp | | | | | | | | | | | | | | | |
| 110 | | | | | 115 | | | | | 120 | | | | | | | | | | | | | | | | | | | | |
| ctc | aac | atc | ccc | ggc | ggc | ggc | gtc | ggc | atc | ttc | gac | gga | tgc | act | ccc | 483 | | | | | | | | | | | | | | |
| Leu | Asn | Ile | Pro | Gly | Gly | Gly | Val | Gly | Ile | Phe | Asp | Gly | Cys | Thr | Pro | | | | | | | | | | | | | | | |
| 125 | | | | | 130 | | | | | 135 | | | | | | | | | | | | | | | | | | | | |
| cag | ttc | ggc | ggt | ctg | ccc | ggc | cag | cgc | tac | ggc | ggc | atc | tcg | tcc | cgc | 531 | | | | | | | | | | | | | | |
| Gln | Phe | Gly | Gly | Leu | Pro | Gly | Gln | Arg | Tyr | Gly | Gly | Ile | Ser | Ser | Arg | | | | | | | | | | | | | | | |
| 140 | | | | | 145 | | | | | 150 | | | | | | | | | | | | | | | | | | | | |
| aac | gag | tgc | gat | cgg | ttc | ccc | gac | gcc | ctc | aag | ccc | ggc | tgc | tac | tgg | 579 | | | | | | | | | | | | | | |
| Asn | Glu | Cys | Asp | Arg | Phe | Pro | Asp | Ala | Leu | Lys | Pro | Gly | Cys | Tyr | Trp | | | | | | | | | | | | | | | |
| 155 | | | | | 160 | | | | | 165 | | | | | | | | | | | | | | | | | | | | |
| cgc | ttc | gac | tgg | ttc | aag | aac | gcc | gac | aat | ccg | agc | ttc | agc | ttc | cgt | 627 | | | | | | | | | | | | | | |
| Arg | Phe | Asp | Trp | Phe | Lys | Asn | Ala | Asp | Asn | Pro | Ser | Phe | Ser | Phe | Arg | | | | | | | | | | | | | | | |
| 170 | | | | | 175 | | | | | 180 | | | | | 185 | | | | | | | | | | | | | | | |
| cag | gtc | cag | tgc | cca | gcc | gag | ctc | gtc | gct | cgc | acc | gga | tgc | cgc | cgc | 675 | | | | | | | | | | | | | | |
| Gln | Val | Gln | Cys | Pro | Ala | Glu | Leu | Val | Ala | Arg | Thr | Gly | Cys | Arg | Arg | | | | | | | | | | | | | | | |
| 190 | | | | | 195 | | | | | 200 | | | | | | | | | | | | | | | | | | | | |
| aac | gac | gac | ggc | aac | ttc | cct | gcc | gtc | cag | atc | ccc | tcc | agc | agc | acc | 723 | | | | | | | | | | | | | | |
| Asn | Asp | Asp | Gly | Asn | Phe | Pro | Ala | Val | Gln | Ile | Pro | Ser | Ser | Ser | Thr | | | | | | | | | | | | | | | |
| 205 | | | | | 210 | | | | | 215 | | | | | | | | | | | | | | | | | | | | |
| agc | tct | ccg | gtc | aac | cag | cct | acc | agc | acc | agc | acc | acg | tcc | acc | tcc | 771 | | | | | | | | | | | | | | |
| Ser | Ser | Pro | Val | Asn | Gln | Pro | Thr | Ser | Thr | Ser | Thr | Thr | Ser | Thr | Ser | | | | | | | | | | | | | | | |
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| acc | acc | tcg | agc | ccg | cca | gtc | cag | cct | acg | act | ccc | agc | ggc | tgc | act | 819 | | | | | | | | | | | | | | |
| Thr | Thr | Ser | Ser | Pro | Pro | Val | Gln | Pro | Thr | Thr | Pro | Ser | Gly | Cys | Thr | | | | | | | | | | | | | | | |
| 235 | | | | | 240 | | | | | 245 | | | | | | | | | | | | | | | | | | | | |
| gct | gag | agg | tgg | gct | cag | tgc | ggc | ggc | aat | ggc | tgg | agc | ggc | tgc | acc | 867 | | | | | | | | | | | | | | |
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| 250 | | | | | 255 | | | | | 260 | | | | | 265 | | | | | | | | | | | | | | | |
| acc | tgc | gtc | gct | ggc | agc | act | tgc | acg | aag | att | aat | gac | tgg | tac | cat | 915 | | | | | | | | | | | | | | |
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Lys Ser Gly Cys Glu Pro Gly Gly Val Ala Tyr Ser Cys Ala Asp Gln
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Thr Pro Trp Ala Val Asn Asp Asp Phe Ala Leu Gly Phe Ala Ala Thr
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Ser Ile Ala Gly Ser Asn Glu Ala Gly Trp Cys Cys Ala Cys Tyr Glu
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Leu Thr Phe Thr Ser Gly Pro Val Ala Gly Lys Lys Met Val Val Gln
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Ser Thr Ser Thr Gly Gly Asp Leu Gly Ser Asn His Phe Asp Leu Asn
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Ile Pro Gly Gly Gly Val Gly Ile Phe Asp Gly Cys Thr Pro Gln Phe
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Gly Gly Leu Pro Gly Gln Arg Tyr Gly Gly Ile Ser Ser Arg Asn Glu
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Cys Asp Arg Phe Pro Asp Ala Leu Lys Pro Gly Cys Tyr Trp Arg Phe
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Gln Cys Pro Ala Glu Leu Val Ala Arg Thr Gly Cys Arg Arg Asn Asp
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Asp Gly Asn Phe Pro Ala Val Gln Ile Pro Ser Ser Ser Thr Ser Ser
 205 210 215

Pro Val Asn Gln Pro Thr Ser Thr Ser Thr Thr Ser Thr Ser Thr Thr
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Ser Ser Pro Pro Val Gln Pro Thr Thr Pro Ser Gly Cys Thr Ala Glu
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Asn Leu Phe Ala Gln Tyr Ser Ala Ala Ala Tyr Cys Gly Lys Asn Asn
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Asp Ala Pro Ala Gly Thr Asn Ile Thr Cys Thr Gly Asn Ala Cys Pro
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Glu Val Glu Lys Ala Asp Ala Thr Phe Leu Tyr Ser Phe Glu Asp Ser
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Gly Val Gly Asp Val Thr Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys
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Leu Ile Val Leu Ser Phe Arg Gly Ser Arg Ser Ile Glu Asn Trp Ile
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Gly Asn Leu Asn Phe Asp Leu Lys Glu Ile Asn Asp Ile Cys Ser Gly
 115 120 125

Cys Arg Gly His Asp Gly Phe Thr Ser Ser Trp Arg Ser Val Ala Asp
 130 135 140

Thr Leu Arg Gln Lys Val Glu Asp Ala Val Arg Glu His Pro Asp Tyr
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Arg Val Val Phe Thr Gly His Ser Leu Gly Gly Ala Leu Ala Thr Val
 165 170 175

Ala Gly Ala Asp Leu Arg Gly Asn Gly Tyr Asp Ile Asp Val Phe Ser
 180 185 190

Tyr Gly Ala Pro Arg Val Gly Asn Arg Ala Phe Ala Glu Phe Leu Thr
 195 200 205

Val Gln Thr Gly Gly Thr Leu Tyr Arg Ile Thr His Thr Asn Asp Ile
 210 215 220

Val Pro Arg Leu Pro Pro Arg Glu Phe Gly Tyr Ser His Ser Ser Pro
 225 230 235 240

Glu Tyr Trp Ile Lys Ser Gly Thr Leu Val Pro Val Thr Arg Asn Asp
 245 250 255

Ile Val Lys Ile Glu Gly Ile Asp Ala Thr Gly Gly Asn Asn Gln Pro
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